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Solar Turbines Testimony
Oil and Gas Sector - Ozone Precursor Pollutants - Title 20 Chapter 2 Part 50

Good morning/afternoon.

Solar Turbines Incorporated (Solar) appreciates the opportunity to provide technical testimony.

Solar is a manufacturer of industrial combustion turbines (1000-32,000 hp). Solar's fleet includes more than 16,000 combustion turbines over 100 countries. Our domestic fleet consists of over 8000 combustion turbines in power generation, pipeline compressor, and mechanical drive applications.

Solar asks that the Board and the New Mexico Environmental Department consider the following comments and the comments and testimony of the New Mexico Oil and Gas Association and our New Mexico customers.

Solar submitted comments on the draft proposal in September of 2020. Per the content of the May 6, 2021 proposed rule, the NMED did make several improvements to the draft in-line with Solar's initial comments. However, there are a few additional improvements that Solar requests to the proposed rule to ensure more equitable treatment between existing reciprocating engines and turbines and to correct a technology availability/achievability assumption error carried over from the "cut and paste" of the Pennsylvania rule used as a template for the turbine emissions limits.

Solar Turbines recommends NMED adjust the NOx emission standard in the smallest turbine category in 20.2.50.113 Table 3 to match 40CFR60 Subpart KKKK emission standards for <50 MMMBtu/hr new, modified or reconstructed units accordingly.

Solar appreciates the NMED raising the NOx level in the smallest turbine category for existing sources, however, the increase is not sufficient to support the existing fleet of Saturn 10 and Saturn 20 turbines. At the proposed 50 ppm NOx level for existing units and 25 ppm NOx for new units, in the 1-5000 hp range, many turbines would require the addition of add-on control, namely SCR. Solar does not believe the intent of the agency is to force these small turbines into very expensive SCR retrofits. A Dry Low NOx (DLN) retrofit is not available on the Saturn line of gas turbine. Water injection, theoretically, may be a technical option on some of the Saturn 20 installed fleet and able to meet the 50 ppm NOx. Water injection, however, is not a technical option for many of the Saturn units so SCR would be the only technically viable option for many installed Saturns. The availability, cost, and use of large volumes of deionized water (estimated 3.5MM gallons per year per Saturn 20), especially at the remote and unmanned sites, would need considerable evaluation.

The NMED modeled the proposed ozone rule after Pennsylvania's GP-5 rule but did not adopt all of the applicability language with respect to existing sources. GP-5 does not impact pre-2013 units. In GP-5, units constructed on or after February 1, 2013, but prior to August 8, 2018 have to meet either 25 or 15 ppm NOx depending on their size. The NMED proposed rule impacts all existing units with no consideration for date of construction. Further background on the GP-5 rule development process is that there were no turbines in Pennsylvania in the 1000-5000 hp range installed on or after February 1, 2013, but prior to August 8, 2018 so no existing units were affected. When GP-5 was being developed Solar commented that the NOx emission standards in this size category are not technically achievable or commercially available from turbine manufacturers but since there were no affected units in Pennsylvania the PADEP, were not inclined to change the rule language. The situation becomes a problem when "cut and

paste" into another states' program where there are affected units in the size category.

New Mexico has many existing turbines in the smallest size category that will be unable to meet the proposed NOx standards without add-on control. A higher emissions level, congruent with Subpart KKKK (150 ppm NOx for existing/reconstructed and 100 ppm NOx for new), will allow for DLN where it's available to be retrofit and allow the smaller turbines, for which DLN is not available, to continue to operate. Many, if not all, of the turbines that fall into this smallest category are Subpart GG (or pre-NSPS) turbines.

Solar recommends the limits for turbines ≥1000 and <5000 hp in Table 3 be modified from 50 ppm to 150 ppm NOx for existing turbines and the 25 ppm for new turbines be modified to 100 ppm NOx to match 40 CFR Subpart KKKK NOx levels.

To help New Mexico achieve their goal with the proposed rule and at the same time consider dry low NOx technology availability, Solar suggests altering the category boundary cutoff from 5000 bhp to 4000 bhp. Assuming NMED heeds the recommendation above to change NOx to 150 ppm and 100 ppm for existing and new, respectively, also changing the category cutoff to 4000 bhp would place Solar Saturns and Centaur 40 4000s, for which there is no dry low NOx option, in the small category and the Centaur 40 4500 and 4700 ratings in the middle category for which there is a dry low NOx retrofit option available.

Solar Turbines requests a compliance schedule for existing turbines tied to the timing of the next major overhaul or a compliance schedule similar to that as proposed for reciprocating engines in 20.2.50.113 B (2).

The header in Table 3 suggests a 2-year compliance timeline for existing turbines. Solar requests a compliance schedule tied to the timing of the next major overhaul or that turbines be treated similarly to reciprocating engines and be given a schedule similar to that in section 20.2.50.113 B (2).

A 2-year timeline from the effective date of rule is unrealistic unless a major routine overhaul was already planned for that timeframe. Typical major overhaul cycles run every 3.5 to 4.5 years depending on the operating hours of the turbine. To accommodate the emissions standards proposed in this rule it is anticipated, that in addition to a dry low NOx retrofit at time of overhaul, upgrades to the package, control system, fuel system, and other ancillary systems will be necessary.

Solar Turbines recommends NMED remove all references to CO from the proposed rule.

Sections 20.2.50.6 and 20.2.50.112 A (2) and (3) clearly state that the scope and objective of the Part is to establish emissions standards for the specific ozone precursors: volatile organic compounds (VOC) and nitrogen oxides (NOx). As such, including emission standards, monitoring, recordkeeping, reporting, and testing requirements for CO should not be included in the rulemaking.

In the event that NMED does not remove all references to CO in this proposed ozone rule, Solar recommends a level of 25 ppm for new sources in all size categories.